EXECUTIVE SUMMARY

This report describes and assesses salmonid habitat in tributary streams of the Snake River, within Washington. Water Resource Inventory Areas (WRIA) 33 (Lower Snake), 34 (Palouse), and 35 (Middle Snake) are examined, although WRIA 35 is the focus of the report. Salmonid habitat limiting factors reports as described in Revised Code of Washington (RCW) 77 are intended to describe and assess salmonid habitat in tributary streams. For this reason, the mainstem lower Snake River will not be evaluated with the exception of a discussion of fish passage issues through the four lower Snake River dams and reservoirs (Ice Harbor Dam at RM 10, Lower Monumental Dam at RM 42, Little Goose Dam at RM 70, and Lower Granite Dam at RM 107). This report examines salmonid habitat only. No attempt has been made to evaluate hydropower, harvest, or hatchery issues. These important factors in the decline of anadromous salmonids in the lower Snake River are being dealt with by other entities. The report is a summary of existing knowledge from both published and unpublished literature and data and interviews of people with technical expertise in the region. It is intended for use in prioritization of salmonid habitat restoration projects. It is not a recovery plan for Snake River salmonid populations, although it could be a component of such a plan. Habitat conditions are described, then assessed based on standards developed from published sources and consultations with local natural resource agency personnel. An attempt is made to identify the causes of habitat degradation. Finally, recommendations are made to protect currently functional habitat as well as restore degraded habitat.

Water Resource Inventory Areas 33 and 35 drain about 722 and 2,250 square miles of southeast Washington respectively. The Palouse River is only examined from the mouth upstream to 185-feet high Palouse Falls, a very small area in relation to the other two basins. Climate in this portion of the state is generally arid to semi-arid in the summer and early fall. Winters are generally cold with moderate snowfall at low elevations and substantial snowfall in the forested Blue Mountains. Basalt flows covered by a blanket of highly erodible loess soil are the dominant geologic feature of the region. Folding and faulting of bedrock and downcutting of streams have created numerous deep canyons throughout the drainage network (Alt and Hyndman 1998).

The four lower Snake River Dams have changed the majority of the Snake River within Washington from a wild and unpredictable river to a series of four highly managed reservoirs (WRIAs 33 and 35). Listing of salmonids under the Endangered Species Act (ESA) began in 1991 with the endangered listing of sockeye from Idaho's Salmon River Basin. Today the Snake River is primarily a migration corridor for sockeye; as well as ESA threatened spring chinook, steelhead, and bull trout (National Marine Fisheries Service 1991, National Marine Fisheries Service 1992, Fish and Wildlife Service 1998, National Marine Fisheries Service 1999). Historically fall chinook spawning in the Washington portion of the Snake River was concentrated near the mouths of the Palouse and Clearwater Rivers (Fulton 1968, cited in Dauble 2000). However, the majority of fall chinook spawning took place much higher in the watershed prior to construction of numerous dams from Hells Canyon upstream (Dauble 2000). The majority of mainstem fall chinook spawning occurs in the free-flowing reach still remaining from Hells Canyon Dam downstream to the City of Asotin, WA. Limited fall chinook spawning also occurs in the tailraces of the four lower Snake River dams, and the lower portions of the Grande Ronde and Tucannon Rivers in Washington and the lower Clearwater River in Idaho (TAG 2001, personal communication). Fall chinook juveniles rear throughout the lower Snake

River (Dauble 2000). Fall chinook are listed as ESA threatened (National Marine Fisheries Service 1992).

Land use impacts associated with dryland agriculture, logging, flood control, concentrated recreational use of public lands, rural and recreational development, roads, and to a lesser extent irrigated agriculture have had significant negative effects on salmonid habitat in Snake River tributary streams (WRIA 35). Conversion of floodplains and riparian forest buffers to agricultural fields and residences, and channel modifications including straightening, diking, and bank armoring have dramatically altered the lower portions of the Tucannon River and Asotin Creek as well as smaller systems such as Alpowa and Deadman Creeks. Logging, conversion of perennial grasslands to annually planted dry cropland, and grazing have led to increased runoff and erosion of fine sediment throughout the region.

Habitat conditions are generally fair to poor on private lands in the lower portions of watersheds. Mid-elevation reaches are generally in fair condition, with patches of degradation. Conditions on public lands in headwater areas, particularly the Wenaha-Tucannon Wilderness Area are generally fair to good. Unfortunately headwater streams drain very steep portions of the Blue Mountains. The geology of these areas leads to naturally low numbers of pools and limited spawning gravel. The largest pools and significant levels of spawning gravel are generally found in the middle or lower portions of the watersheds where alterations of stream channels, removal of riparian vegetation, and surface water withdrawals (which exacerbate naturally low summer stream flows) have combined to increase water temperatures above the tolerance levels of salmonids. Fine sediment deposition is also a problem in these low gradient stream reaches. However, habitat restoration efforts have been taking place since the mid-1990s, largely beginning with the development of "Model Watershed Plans" for the Asotin Creek, Tucannon River, and Pataha Creek watersheds. Many entities and funding sources have partnered in habitat restoration and/or improvement projects on Snake River tributary streams in WRIA 35.

WRIAS 33, 34, 35 RECOMMENDATIONS

Protect existing relatively high quality salmonid habitat on public lands and small patches that remain on private lands. This includes stream reaches that currently exhibit one or more of the following desirable features: natural sinuosity, functional floodplains, riparian forest buffers, abundant large woody debris, large and deep pools with instream or overhead cover, clean spawning substrate, sufficient summer stream flows, and cold summer water temperatures; or currently support salmonid populations.

On developed or modified stream reaches restore "normative" river function through dike removal or setback, removal of bank armoring, meander reconstruction (increase sinuosity), and riparian forest buffer restoration.

In the short term, improve instream habitat through large woody debris placement, pool construction, and riparian plantings in limited locations specified by technical experts. Reliance on instream projects should be minimized since they largely treat symptoms, rather than addressing the root cause(s) of habitat degradation.

In the long term, reduce summer stream temperatures, improve bank and channel stability, and increase large woody debris abundance by reestablishing riparian forest buffers along all streams where forests were historically present.

Practice proper riparian vegetation management to ensure healthy vigorous plant growth of woody vegetation and natural regeneration. Best management practices (BMPs) could include, but are not limited to: limited riparian "flash grazing," pasture rotation, fencing livestock out of streams and riparian areas, and development of off-site watering facilities.

Reduce erosion of fine sediment by implementing no-till/direct seed farming methods on as many acres as possible. Implement other BMPs including riparian forest buffers, grassed waterways, terraces, sediment basins, and the Conservation Reserve Program (CRP) where appropriate. Continue education and cost share programs to encourage conversion to no-till/direct seed farming.

Enhance summer stream flows through water lease and/or purchase or irrigation efficiency improvements. Conversion of conventionally tilled acreage to no-till/direct seed may improve stream flows through increased water infiltration to aquifers where it will be released gradually to streams. Enforce existing water laws.

Inventory all surface water diversions (both legal and illegal). Screen all diversions to state and federal criteria and halt operation of illegal diversions.

Enforce existing land use regulations including Critical Area Ordinances, Shoreline Management Act, and the Growth Management Act.

Reduce and/or eliminate further floodplain development. Where possible restore floodplain function on reaches that were modified in the past.

Inventory habitat conditions as well as fish presence and relative abundance on southeast Washington streams every five years to fill data gaps and monitor success of habitat restoration

projects. Conduct continuous monitoring of water quality parameters such as water temperature and total suspended solids.

Update this report within a three to five year period to replace TAG information with data collected during the inventories recommended previously.